

# Biological Benefits to San Joaquin River Salmon Attained Under Different Levels of Unimpaired Flow (UIF)

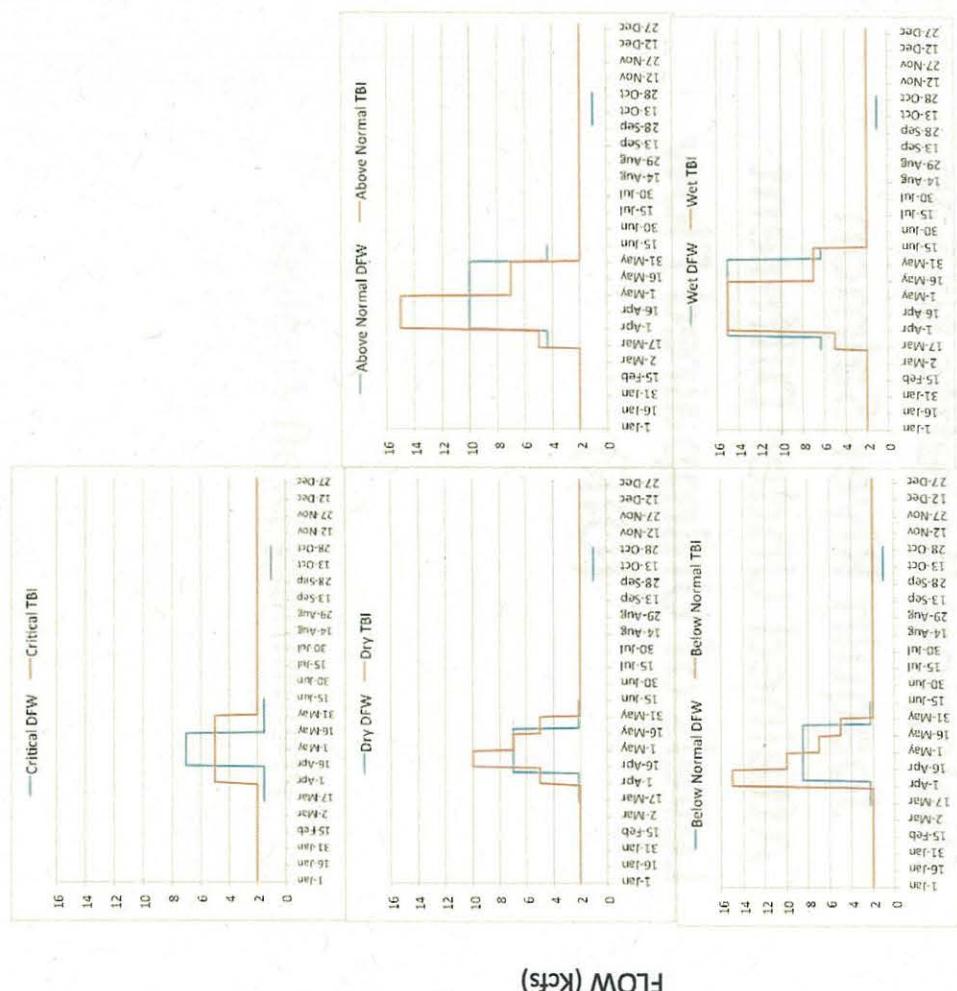
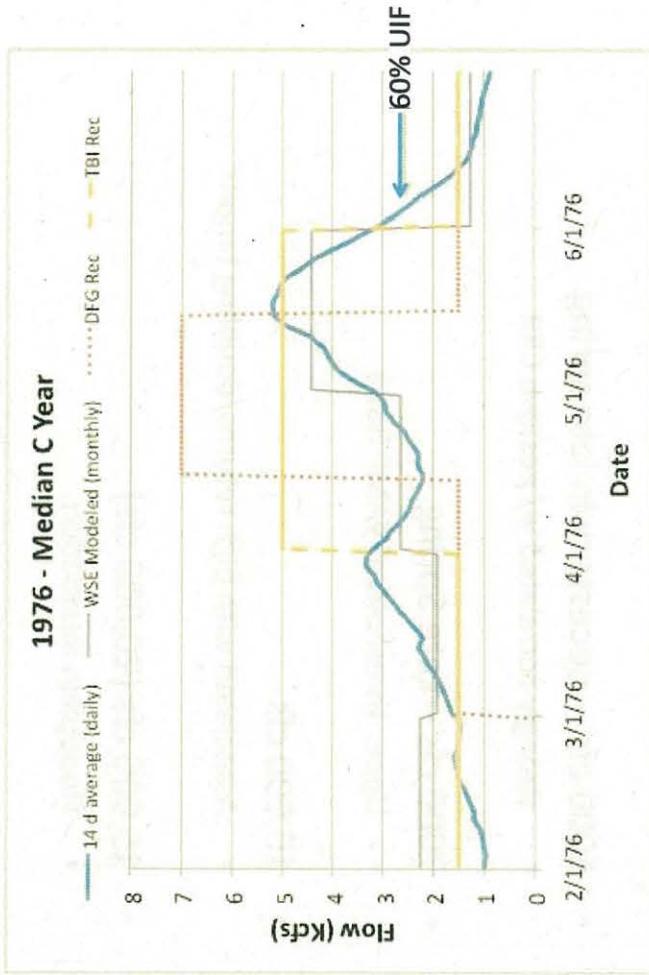
## Preliminary Draft Analysis

### Critical Flow Levels

- 2000 cfs – necessary year round
  - maintain a migration corridor (dissolved oxygen)
- 5000 cfs -- necessary in late spring
  - maintain a migration corridor (temperature)
- 5000 cfs -- necessary in late spring
  - strongly correlated w/ positive CRR
- 7000 cfs – Late Spring
  - Upper threshold of VAMP flows
- 10,000 cfs
  - Associated with high returns/doubling targets
- 15,000 cfs (20,000 cfs)
  - Floodplain inundation

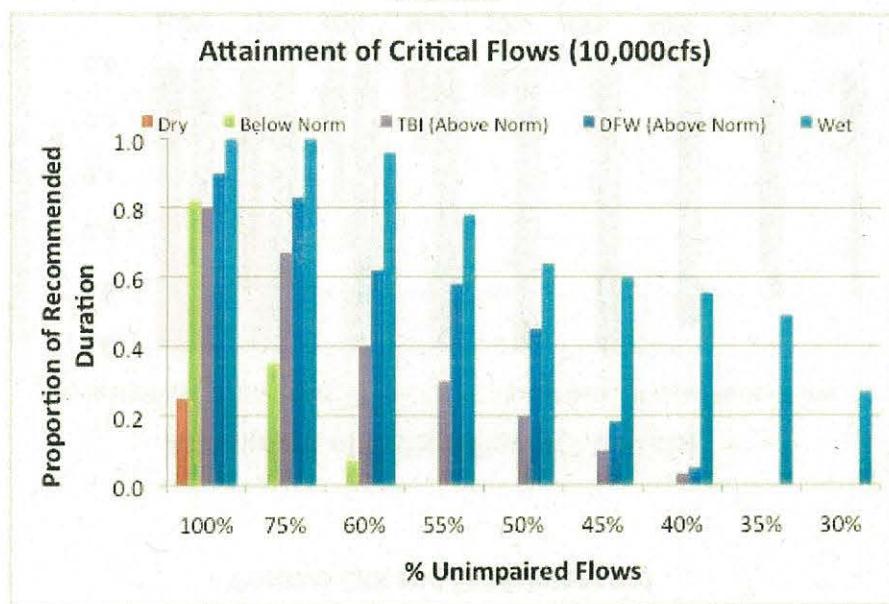
Previous DFW & TBI et al.  
Recommendations were Completely  
“Shaped”

## Engineered Hydrographs are Not “Natural” Hydrographs

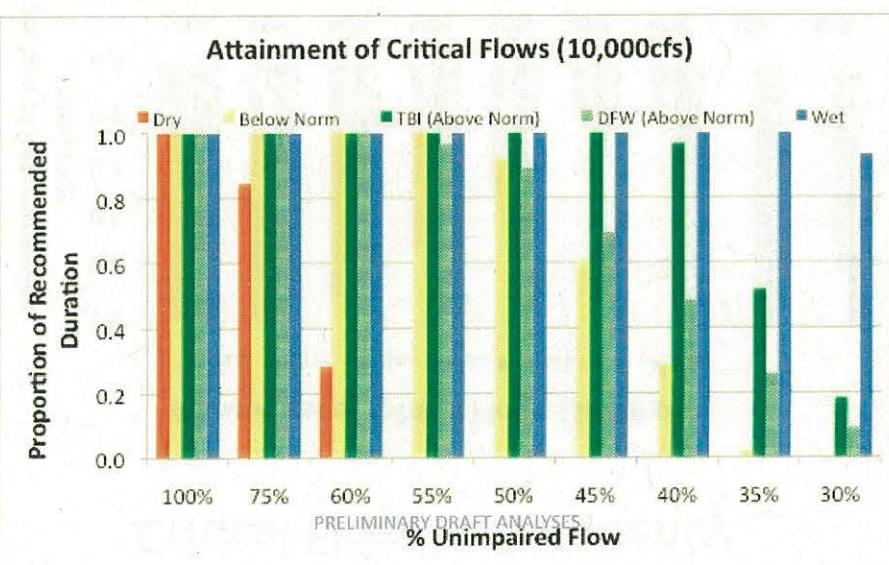


## Attainment: Strict vs. Loose Interpretation

### Strict



### Loose

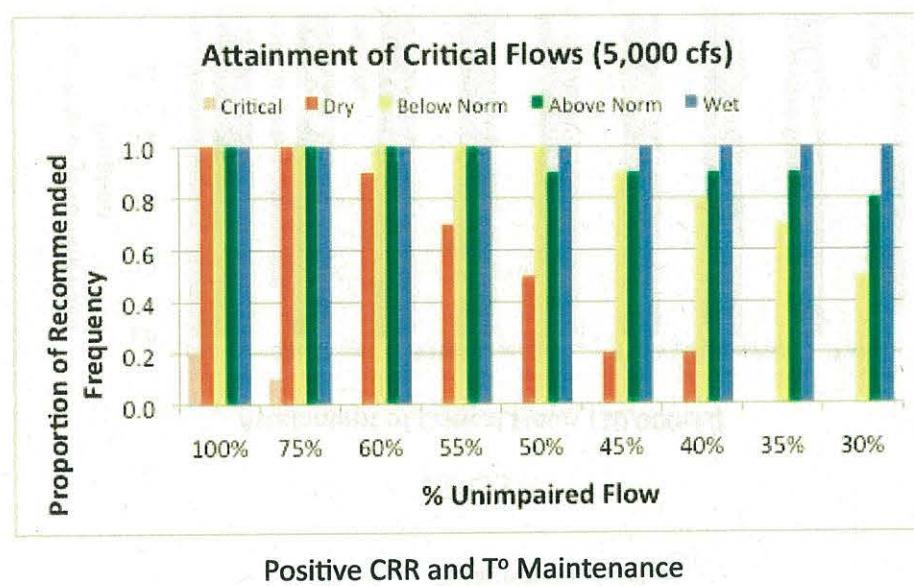


## Assumptions for TBI Modeling of %UIF approach

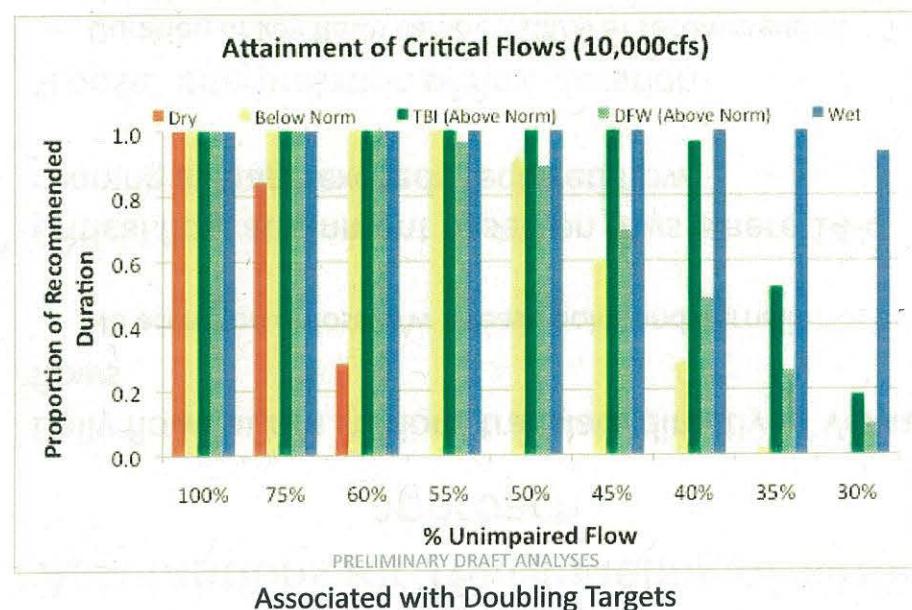
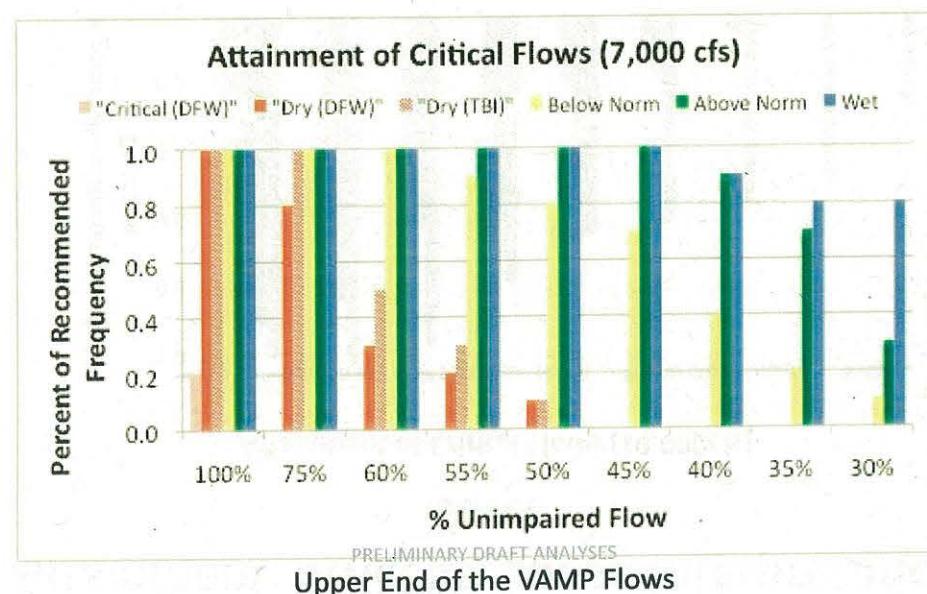
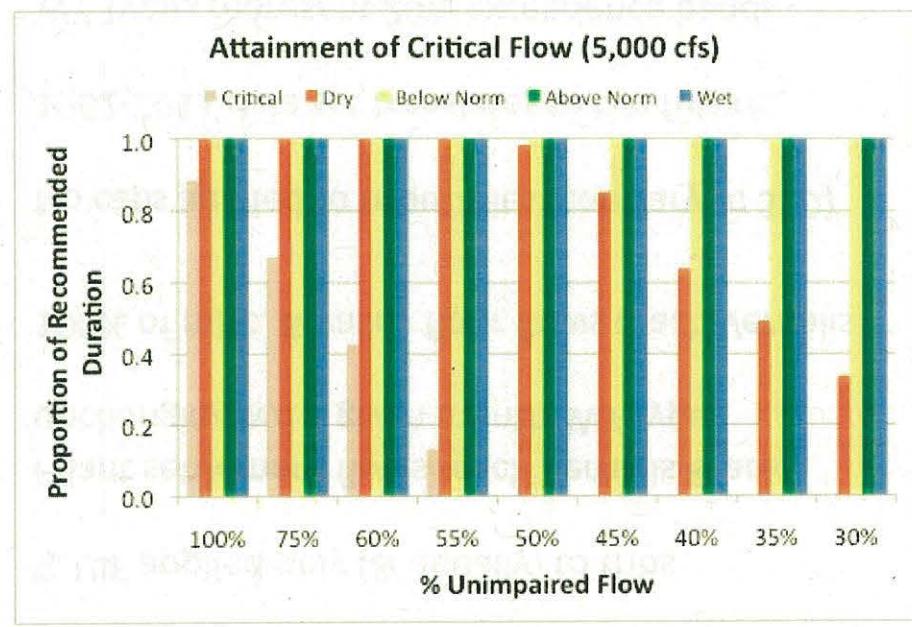
- Daily flows at rim stations translate directly to Vernalis flows
  - No accretion or loss b/w release point and Vernalis
- Critical flow attainment based on days where 14-d running average exceeds required flow
- “Loose” interpretation of flow duration
  - Duration of key flows can be >100% of recommended duration
- % UIF applied only (& equally) to tributaries
- Friant settlement flows reach Vernalis & are unchanging w/i a given month/WY type
- 100% of misc. & valley floor flows reach Vernalis
- No caps applied to tributaries (contrary to SED)
- 1962-2011 data set translates to the future
- WY Types represent 20% exceedence bands
  - (e.g. Wet years =81-100%, Above Normal =61-80%, etc.)

PRELIMINARY DRAFT ANALYSES

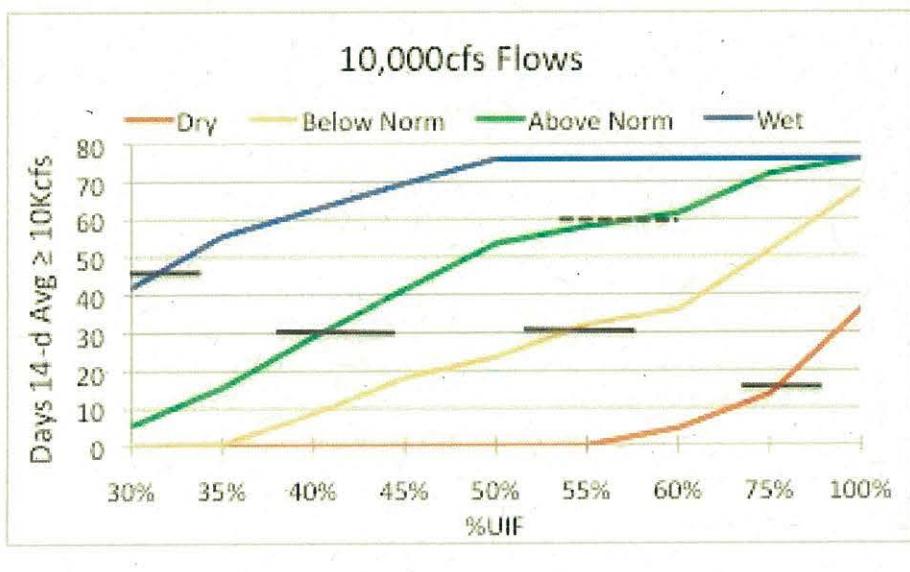
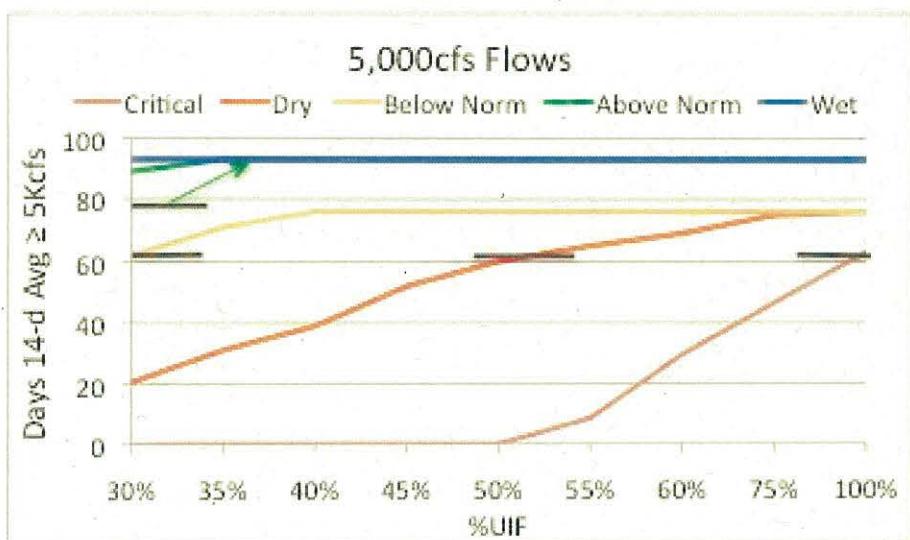
## Critical Flows -- Frequency



## Critical Flows -- Duration



## Accumulation of “good” days



## Some Flows Will Be Engineered

